Amendments to the Claims:

Please amend claims 8 and 41, and add new claims 53 and 54. This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-7 (canceled).

8. (currently amended) A method for identifying a compound that modulates cellular proliferation or chemosensitivity, the method comprising the steps of:

(i) contacting the compound with a meiotic recombination 11 (MRE11) polypeptide~~, the polypeptide encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoding a polypeptide having an amino acid sequence of~~ wherein the polypeptide has at least 95% amino acid sequence identity to SEQ ID NO:2 and has nuclease activity; and

(ii) determining a functional effect of the compound upon the MRE11 polypeptide; and

(iii) determining the chemical or phenotypic effect of the compound upon a cell comprising an MRE11 polypeptide, thereby identifying a compound that modulates cellular proliferation or chemosensitivity.

9. (original) The method of claim 8, wherein the functional effect is measured in vitro.

10. (original) The method of claim 9, wherein the functional effect is a physical effect.

11. (previously presented) The method of claim 10, wherein the physical effect is determined by measuring a substrate binding to the polypeptide.

12. (original) The method of claim 9, wherein the functional effect is a chemical effect.

13. (original) The method of claim 12, wherein the chemical effect is determined by measuring endonuclease or exonuclease activity of the MRE11 polypeptide.

14. (previously presented) The method of claim 8, wherein the MRE11 polypeptide is expressed in a eukaryotic host cell.

15. (original) The method of claim 14, wherein the functional effect is a physical effect.

16. (previously presented) The method of claim 15, wherein the physical effect is determined by measuring a ligand binding to the polypeptide.

17. (original) The method of claim 14, wherein the functional effect is a chemical or phenotypic effect.

18. (original) The method of claim 17, wherein the chemical or phenotypic effect is determined by measuring endonuclease or exonuclease activity of the MRE11 polypeptide.

19. (original) The method of claim 17, wherein the chemical or phenotypic effect is determined by measuring cellular proliferation.

20. (original) The method of claim 19, wherein the cellular proliferation is measured by assaying for DNA synthesis or fluorescent marker dilution.

21. (original) The method of claim 20, wherein DNA synthesis is measured by ^{3}H thymidine incorporation, BrdU incorporation, or Hoescht staining.

22. (original) The method of claim 20, wherein the fluorescent marker is selected from the group consisting of a cell tracker dye or green fluorescent protein.

23. (original) The method of claim 8, wherein modulation is inhibition of cellular proliferation.

24. (original) The method of claim 8, wherein modulation is inhibition of cancer cell proliferation.

25. (original) The method of claim 8, wherein modulation is activating sensitivity to chemotherapeutic reagents.

26. (original) The method of claim 8, wherein modulation is activating sensitivity of cancer cells to chemotherapeutic reagents.

27. (original) The method of claim 14, wherein the host cell is a cancer cell.

28. (original) The method of claim 27, wherein the cancer cell is a breast, prostate, colon, or lung cancer cell.

29. (original) The method of claim 27, wherein the cancer cell is a transformed cell line.

30. (original) The method of claim 29, wherein the transformed cell line is PC3, HI299, MDA-MB-231, MCF7, A549, or HeLa.

31. (previously presented) The method of claim 27, wherein the cancer cell is a p53 null or mutant cell.

32. (previously presented) The method of claim 27, wherein the cancer cell is a p53 wild-type cell.

33. (original) The method of claim 27, wherein the cancer cell is treated with bleomycin or etoposide.

34. (original) The method of claim 8, wherein the polypeptide is recombinant.

35. (original) The method of claim 8, wherein the polypeptide is encoded by a nucleic acid having a sequence of SEQ ID NO:1.

36. (original) The method of claim 8, wherein the compound is an antibody.

37. (original) The method of claim 8, wherein the compound is an antisense molecule.

38. (original) The method of claim 8, wherein the compound is a small organic molecule.

39. (original) The method of claim 8, wherein the compound is a peptide.

40. (original) The method of claim 39, wherein the peptide is circular.

41. (currently amended) A method for identifying a compound that modulates cellular proliferation or chemosensitivity, the method comprising the steps of:

(i) contacting the compound with meiotic recombination 11 (MRE11) polypeptide~~, the MRE11 polypeptide encoded by a nucleic acid that hybridizes under stringent conditions to a nucleic acid encoded by a polypeptide comprising an amino acid sequence of~~ wherein the polypeptide has at least 95% amino acid sequence identity to SEQ ID NO:2 and has nuclease activity;

(ii) determining the physical effect of the compound upon the MRE11 polypeptide; and

(iii) determining the chemical or phenotypic effect of the compound upon a cell comprising an MRE11 polypeptide, thereby identifying a compound that modulates cellular proliferation or chemosensitivity.

42-52. (canceled)

53. (new) The method of claim 8, wherein the MRE11 polypeptide has an amino acid sequence of SEQ ID NO:2.

54. (new) The method of claim 8, wherein the MRE11 polypeptide is encoded by a nucleic acid sequence having at least 95% nucleic acid sequence identity to SEQ ID NO:1.